DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY | 5000 OVERLOOK AVENUE, SW | WASHINGTON, DC 20032

October 23, 2018

Ms. Jillian Adair
Water Protection Division (3WP30)
U.S. Environmental Protection Agency, Region 3
1650 Arch Street,
Philadelphia, PA 19103–2029
adair.jillian@epa.gov

Subject: Anacostia River Watershed: Data Solicitation in Support of Revising Total Maximum Daily Loads for Debris, Floatables, Trash

Dear Ms. Adair:

Background

On September 21, 2010, EPA approved a trash TMDL for the Anacostia River (the "TMDL"). Rather than specifying the maximum amount of trash that could enter the river to comply with the applicable water quality standards, the TMDL provided for compliance with the applicable standards by specifying the minimum amount of trash that had to be removed or otherwise prevented from entering the river. In specifying the minimum rather than the maximum amount of trash that could enter the river, the District of Columbia and Maryland expressed the TMDL in the same way as every other trash TMDL in the country. To our knowledge, this removal-based approach used in these other trash TMDLs has never been challenged in a court and these TMDLs remain in effect today.

The Natural Resources Defense Council (NRDC) challenged EPA's approval of the TMDL in the U.S. District Court for the District of Columbia, arguing that the removal-based approach used in the TMDL is inconsistent with the Clean Water Act's requirement that TMDLs must be expressed as a total maximum daily load on the amount of a pollutant that can be discharged. On March 30, 2018, the Court agreed with NRDC and directed EPA to develop or approve a replacement TMDL. On August 24, 2018, EPA published a notice in the Federal Register seeking information on trash in the Anacostia River watershed for use in the development of the replacement TMDL. The Federal Register notice requested information on the following two areas:

- Any studies, surveys or other statistically significant information on the quantities of trash that would interfere with the general population's use and enjoyment of the river for purposes such as swimming, boating and fishing.
- Documents or datasets that provide information regarding water quality conditions and sources associated with quantities of trash in the water.

The Suitability of Trash for Calculating TMDLs Expressed as Maximum Loads that can Enter the River

Before providing the information below in response to EPA's request, DC Water wishes to take this opportunity to call EPA's attention to footnote 6 of the Court's March 30, 2018 memorandum opinion where the Court questioned why EPA had not reconsidered its 1978 regulation designating trash as suitable for the calculation of maximum daily loads in light of the acknowledged unique characteristics of trash that make it so difficult to reliably calculate a maximum discharge load for this particular pollutant. DC Water believes the Court's question raises an important issue which deserves further consideration during this process. For that reason, we are evaluating it as an option and will appreciate the opportunity to discuss it with EPA, DOEE, MDE and NRDC after we have completed our evaluation.

DC Water's Combined Sewer System

DC Water operates the wastewater collection system for the District of Columbia and provides wastewater treatment for approximately 2 million people in the District of Columbia and portions of suburban Prince Georges and Montgomery County, Maryland and Fairfax and Loudoun County, Virginia. There are 47 potentially active CSO outfalls in the District's combined sewer system, 14 of which discharge to the Anacostia River. In accordance with a Federal Consent Decree signed by DC Water, the Environmental Protection Agency, the Department of Justice and the District of Columbia, DC Water is implementing its Long Term Control Plan (LTCP or Clean Rivers Project) to control CSOs and bring them into compliance with water quality standards. The Clean Rivers Project costs is $2.7 billion and represents a significant burden on ratepayers.

The CSO projects in the Consent Decree designed to control the CSOs discharging to the Anacostia River and their implementation status are in Table 1 and shown on Figure 1.

Table 1
Implementation Status of CSO Projects Controlling Anacostia River CSOs

Facility	Status
Rehabilitation of Main, O Street and Eastside Pumping Stations	Placed in operation in 2008
Separation of CSO 006	Placed in operation in 2010
New Poplar Point Pumping station	Placed in operation March 20, 2018
Tunnel from Blue Plains Advanced Wastewater Treatment Plant to CSO 019 comprising more than 100 million gallons of storage	
225 million gallons per day Tunnel Dewatering Pumping Station and Wet Weather Treatment Facility at Blue Plains	
Northeast Boundary Tunnel	Under construction, scheduled to be placed in operation in 2023

The tunnel system that was placed in operation on March 20, 2018 provides for control of all CSOs on the Anacostia River, with approximately 100 million gallons of storage and 225 million gallon per day wet weather treatment facility at Blue Plains. The Northeast Boundary tunnel which is scheduled to be placed in operation in 2023 will add approximately 90 million gallons of storage.

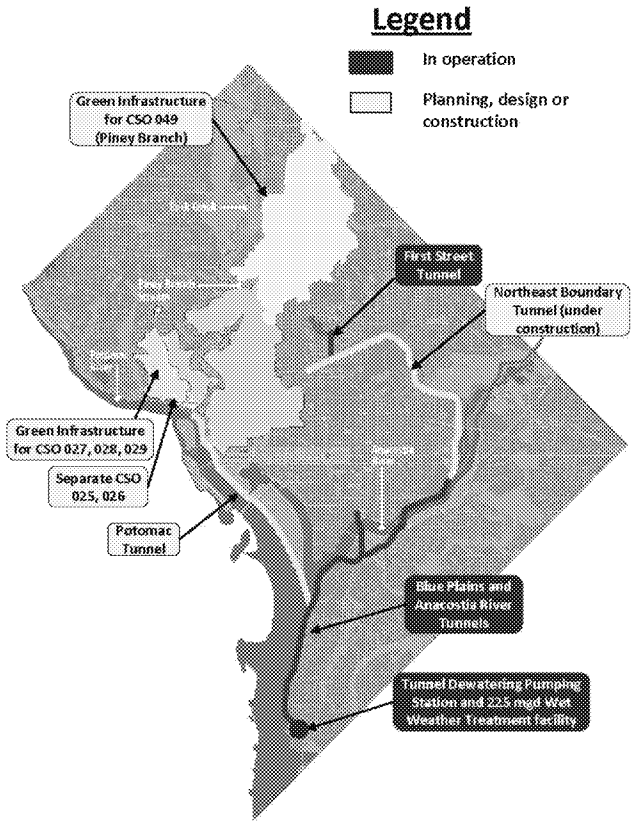

Figure 1
Status of Implementation of Clean Rivers Project

August 2010 Trash TMDL

The 2010 Trash TMDL assigned wasteload allocations (WLAs) to CSOs as shown in Table 2.

Table 2
Wasteload Allocations Assigned to CSOs

Location	WLA (lbs/yr removed)	WLA (lb/day removed)
DC Upper Anacostia CSO	62,401	171.0
DC Lower Anacostia CSO	31,185	85.4
Total	93,586	256.40

The WLAs were based on removal of 100% of the baseline trash load calculated for CSOs. The baseline trash load was calculated as follows:

- Annual CSO overflow volume was based on DC Water's combined sewer system model run for the condition prior to implementing the tunnels in the Clean River Project, but including rehabilitation of the pumping stations and inflatable dams tributary to the Anacostia. The predicted annual overflow volume was 1,282 million gallons per average year.

- The climate condition used to run the model was the average annual year defined as the average of the rainfall in the years 1988, 1989 and 1990
- The trash load was based on the Metropolitan Washington Council of Governments study of trash from CSO 018 conducted in 2001. This study determined there were 730 pounds per million gallons of trash and organic debris in this CSO outfall during the study period, with trash comprising 10% of the weight and natural organic matter comprising the remaining 90% of the weight. The trash loading rate for this CSO was 73 lbs/mg.
- Daily allocations were based on dividing the annual allocations by 365 days per year.

DC Water Data on Trash in Combined Sewer Overflows

Trash is defined as improperly discarded waste material, including, but not limited to, convenience food, beverage, and other product packages or containers constructed of steel, aluminum, glass, paper, plastic, and other natural and synthetic materials thrown or deposited on the land or water. The following are sources of information regarding trash in the CSOs.

- October 2001 Study of CSO 018
  In 2000, DC Water installed an end of pipe netting system at CSO 018 to capture trash from this outfall. From August 2000 to April 2001, DC Water retained the Metropolitan Washington Council of Governments to characterize the efficiency of the trash trap netting system by installing a boom outboard of the of the netting system to capture trash not captured by the nets. In addition, COG removed the captured material characterized it by weight by differentiating natural from man-made materials. A flow meter was installed on the CSO outfall to measure the quantity of combined sewer overflow. The report is titled *DC-WASA Combined Sewer Overflow Anacostia River Trash Reduction Demonstration Project: Fresh Creek Netting Trash Trap System* [1].

  DOEE used the data in the report as part of the TMDL to calculate a human made trash loading of 79 lbs/ million gallons for CSO 018. The data used to make this calculation is shown in the table below. Based upon a review of the data, it appears an error was made in the estimation. The value of 79 lbs/mg was based on taking an arithmetic average of the data from each storm (average of column I: 210, 35, 112, 25, 15). This approach equally weighs a very small storm such as 8/2/2000 where 0.21 mg overflowed, with a large storm such as 9/27/2000 where 2.75 mg overflows. To address this, most CSO programs use 'event mean concentrations" instead of arithmetic averages. This is calculated by taking the total pounds of trash (1,869 lbs) divided by the total volume of CSO (5.214 mg) and multiplying it by 10% for the portion that is human made trash. This results in a value of 36 lbs/mg, which we believe is a better estimate of the overall trash from this study.

[1] https://www.anacostia.net/Archives/download/CSO_Trash_Report.pdf

Table 3
Trash Data from MWCOG Study of CSO 018

A	B	C	D	E	F	G	H	I
Date of Net Change	# events	Total Rainfall (in)	Material Weight (Trash + Organic) (lbs) Netted	Fugitive	Total	CSO Overflow (mg)	Total Material (lb/mg)	Trash @ 10% (lb/mg)
8/2/2000	1	0.75	380	60	440	0.210	2,095	210
8/11/2000	5	1.29	225	120	345	0.999	345	35
8/29/2000	5	0.64	374	80	454	0.405	1,121	112
9/14/2000	5	1.50	189	26	215	0.850	253	25
9/27/2000	2	3.88	375	40	415	2.750	151	15
Total					1869	5.214		
Arithmetic Average (lb/mg)							793	79
Event Mean Concentration (lb/mg)							358	36

- October 2018 Data from Anacostia River Tunnel System

  The Anacostia River Tunnel System tunnel system was placed in operation on March 20, 2018 and it provides for control of all CSOs on the Anacostia River, with approximately 100 million gallons of storage and the 225 million gallon per day wet weather treatment system at Blue Plains. CSO overflow captured by the tunnel system is conveyed to the tunnel dewatering pumping station and wet weather treatment facility at Blue Plains. There, solids, debris and other trash are removed in the following areas:

  - Rock Trap in screening shaft of tunnel – this is a sump in the bottom of the tunnel upstream of the pumping station. Material removed from this area has been found to be mostly grit and sludge with very little trash.
  - Fine screens – flow that is pumped out of the tunnel is treated by perforated plate fine screens that capture organic matter, debris and trash prior to the treatment process.
  - Grit removal facilities-flow pumped from the tunnel is treated to remove grit to protect downstream facilities. Again, this material contains very little trash.

  Based on the forgoing, the primary device where trash is collected is the fine screens. Data on CSO volume captured by the tunnel and the weight of trash and debris collected by the tunnel was collected for the period from March 20, 2018 to September 31, 2018. In addition, DC Water took samples of the fine screening material on October 11, 2018 to quantify the proportion of collected material that was trash versus natural material. The methodology and results are shown in Exhibit 1. The analysis found that 5.8% by weight of the material removed by the fine screens was trash with the remaining 94.2% being natural organic matter. Table 4 shows the CSO volumes captured, Table 5 shows the trash and natural matter collected and Table 6 is the calculation identifying the pounds of trash per million gallons of CSO.

Table 4
Anacostia River CSO Volumes

Date	Rainfall, avg of 4 gages (in)	Rainfall, National Airport (in)	Volume Captured by Tunnel (mg)	Measured Overflow (mg)	Total (captured + overflow) (mg)	% Captured
March 20-31 2018	0.59	1.36	20	0	20	100%
April 2018	7.11	3.59	719	4	723	99%
May 2018	3.51	8.73	438	58	496	88%
June 2018	2.21	5.21	140	6	146	96%
July 2018	7.34	9.73	598	230	828	72%
August 2018	6.38	5.19	691	73	764	90%
September 2018	6.67	9.73	775	109	884	88%
Total	32.32	43.59	3,192	432	3,624	88%

Table 5
Anacostia River Tunnel Solids, Debris and Trash Captured

Date	Fine Screens (tons)	Grit Removed (tons)	Rock Trap in Screening Shaft (tons)	Total
March 2018	-	-	-	
April 2018	1.98	0.00	6.09	
May 2018	61.55	8.95	10.60	
Jun 2018	15.11	5.84	40.05	
July 2018	10.45	0.00	0.00	
August 2018	7.14	24.02	218.44	
September 2018	22.60	24.55	71.03	
Total (tons)	118.83	63.36	346.21	528.40
% Trash	5.8%	0%	0.5%	
Trash (tons)	6.9	0	1.73	8.63
Trash (lbs)	13,884	0	3,462	17,246

Table 6
Calculation of Average Trash Concentration in Anacostia CSOs

Item	Units	Value
CSO volume captured March 20 – Aug 31, 2018	Million Gallons	3,192
Trash captured	pounds	17,246
Event mean concentration of trash	lbs/mg	5.4

The period of time during which the Anacostia Tunnel system has been in service from March 20-September 31, 2018 has been exceptionally wet. At National Airport, there has been more than 43 inches of rain in approximately 6 months. This is about 110% of a typical year's rainfall of about 39.7" in about 6 months. In addition, the National Weather Service indicated the following statistics for 2018:

- 6th wettest May on record
- 4th wettest July on record (all rain in second half of month)
- 5th wettest September on record

The amount of rainfall has dramatically increased the CSO volume, thereby decreasing the concentration of trash in terms of lbs/million gallon of CSO. As an example of the possible variability, we did a calculation assuming the following:

- Same mass of solids and debris collected in the tunnel on the assumption that the increased rainfall did not substantially change trash deposition rates in the drainage areas
- Trash proportion was 10% of the total mass collected
- CSO volume was in proportion to total rainfall and therefore decreased to 1,555 mg in a typical year (3,192 mg x (21.21" normal rainfall/ 43.59" measured rainfall at National Airport)

Based on this, the trash proportion would increase from the 5.4 lbs/mg calculated to 17.5 lb/mg. This shows the significant variability in trash concentrations in CSO.

Estimated Baseline Trash Loads Before and After LTCP

As evidenced by the data above, trash loads produced by CSOs are extremely variable and are dependent on a variety of factors, including the amount of rainfall, antecedent dry time for trash to collect on streets, timing of rainfall versus maintenance activities such as street sweeping, the intensity and nature of the rain and activities by the population in the sewershed. Trash loads in the above two studies have ranged from 5.4 lbs mg to 210 lbs/mg. The event mean concentration of 36/lbs mg for CSO 018 was selected as a conservative value based on the data collected to date. Table 7 shows the resulting trash load predictions for the system prior to the LTCP, after the LTCP and the interim condition in 2008 that was used in the 2010 Anacostia Trash TMDL.

Table 7
Predicted Trash in Anacostia CSOs

Sewer Condition	Rainfall Climate Condition [1]	Predicted Anacostia CSO Overflow Volume (mg/avg yr)	Trash Concentration (lb/mg)	Trash (lbs/yr)	Trash (lbs/day) [2]
Prior to LTCP	Average year	2,142	36	77,112	211
After Inflatable Dams and Pumping Station rehabilitation (2008)	Average year	1,282	36	46,152	126
After complete LTCP	Average year	54	36	1,944	6

Notes:
1. Average year is average of the rainfall in the years 1988, 1989 and 1990
2. Based on annual load/ 365 days

CSOs Compliance with Water Quality Standards

On August 28, 2003, the District Department of Health (now Department of Energy and Environment) certified that the proposed control program in the Final LTCP Report, including the upgrades to Blue Plains, would comply with the District's water quality standards.[2] EPA concurred in DOH's standards compliance determination in a memorandum dated November 29, 2004.[3] Both compliance determinations confirmed that the proposed CSO control program would comply with the water quality standards, both narrative and numeric, subject to post construction monitoring. Therefore, regardless of the method used to establish a level of trash in the receiving water that meets the narrative standard, the revised TMDL should include the trash loads for CSOs to the Anacostia River remaining after implementation of the LTCP as being compliant with the narrative water quality standard for trash.

Compliance Provisions in any TMDL

Although the above data and calculations reflect DC Water's best estimates of the trash loads for CSOs to the Anacostia River after implementation of the LTCP, it critical that these estimates not be used as numeric effluent limits in DC Water's NPDES permit by ensuring that the TMDL document includes the following compliance related narratives.

- The LTCP is designed to reduce pre-LTCP average year CSO overflow volume from 2,142 million gallons to 54 million gallons, which equates to a 98 percent reduction. However, because overflows would remain after LTCP implementation (already determined by DDOE to meet existing numeric and narrative water quality standards), the capacity of the LTCP would not eliminate the discharge of trash from the combined sewer system.

- Indicate in the TMDL that the trash loading predictions for CSOs are based upon an average year of rainfall, defined for CSOs in the final LTCP as the average of the rainfall in the years 1988, 1989 and 1990. The actual numerical value of trash in remaining CSOs should not be the judgment of compliance with the TMDL and should not be included as a numerical value in an NPDES permit.

- We understand the TMDL will include maximum daily loads for trash. Indicate in the TMDL that the calculated pounds per day of trash is based on the annual load divided by 365 days. This is important because CSOs are episodic events driven by rainfall and trash loading will not occur from this source when there is no rainfall.

- Because of extreme variability of trash generation rates in the sewershed, rainfall conditions and other factors, and the difficulty in measuring trash discharges, other methods are more appropriate for establishing compliance provisions. Many TMDLs for trash have been established in California where technology or management standards are defined as providing the capture necessary to meet water quality standards and the TMDL. These include the installation of full capture systems which are defined based on the size of the screen and the design treatment storm or the implementation of

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[2] DOH's LTCP standards compliance determination was confirmed in a memorandum dated November 3, 2004, from James R. Collier to Doreen E. Thompson and in a memorandum dated November 4, 2004, from Caroline Burnett to Bruce Brennan. See Exhibit 2.

[3] *See* memorandum to the file dated November 29, 2004, a copy of which is attached to and incorporated by reference in these comments as Exhibit 3.

maintenance standards such as minimum frequencies of assessment and collection (MFAC). Examples of these TMDLs include the Ventura River Estuary TMDL[4] and the Malibu Creek Watershed TMDL[5] along with many others. The Long Term Control Plan and Consent Decree contain the controls that have been determined by the District and EPA to meet water quality standards for CSOs. Therefore, the TMDL should define that implementation of the approved Long Term Control Plan and compliance with NPDES permit conditions for the combined sewer system would constitute compliance with the TMDL.

Thank you for the opportunity to submit comments and we are available to answer any questions regarding our comments.

Sincerely,

Leonard R. Benson
Chief Engineer

c: Henderson Brown, DC Water
Carlton Ray, DC Water
Jeff Seltzer, DOEE

Enclosures:
Exhibit 1 - DC Water Trash Study of Anacostia River Tunnel
Exhibit 2 - DOH Memos on Water Quality Standards Compliance
Exhibit 3 - EPA Memo on Water Quality Standards Compliance

[4] Ventura River Estuary TMDL:
https://www.waterboards.ca.gov/losangeles/board_decisions/basin_plan_amendments/technical_documents/2007-008/06%20Staff%20Report.pdf
[5] Malibu Creek TMDL:
https://www.waterboards.ca.gov/rwqcb4/board_decisions/basin_plan_amendments/technical_documents/63_New/08_0214/MCW%20Trash%20Staff%20Rpt%20021408.pdf

Exhibit 1
DC Water Trash Study of Anacostia River Tunnel

MEMORANDUM

October 12, 2018

TO: Carlton Ray

FROM: John Cassidy, Brandon Flora, Nick Bonacquisti

SUBJECT: Trash Study of Anacostia River Tunnel

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1. Background

DC Water operates the wastewater collection system for the District of Columbia and provides wastewater treatment for approximately 2 million people in the District of Columbia and portions of suburban Prince Georges and Montgomery County, Maryland and Fairfax and Loudoun County, Virginia. There are 47 potentially active CSO outfalls in the District's combined sewer system, 14 of which discharge to the Anacostia River. In accordance with a Federal Consent Decree signed by DC Water, the Environmental Protection Agency, the Department of Justice and the District of Columbia, DC Water is implementing its Long Term Control Plan (LTCP or Clean Rivers Project) to control CSOs and bring them into compliance with water quality standards.

The Anacostia River Tunnel System tunnel system was placed in operation on March 20, 2018 and it provides for control of all CSOs on the Anacostia River, with approximately 100 million gallons of storage and the 225 million gallon per day wet weather treatment system at Blue Plains. CSO overflow captured by the tunnel system is conveyed to the tunnel dewatering pumping station and wet weather treatment facility at Blue Plains. There, solids, debris and other trash are removed in the following areas:

- Rock Trap in screening shaft of tunnel – this is a sump in the bottom of the tunnel upstream of the pumping station. Material removed from this area has been found to be mostly grit and sludge with very little trash.
- Fine screens – flow that is pumped out of the tunnel is treated by perforated plate fine screens that capture organic matter, debris and trash prior to the treatment process.
- Grit removal facilities-flow pumped from the tunnel is treated to remove grit to protect downstream facilities. This material contains very little trash.

2. Background

The purpose of this memorandum is to document the results of an assessment performed of the trash removed from the fine screens. The purpose was to take a representative sample of the fine screenings and segregate the material into two components to determine the relative weight of each portion as follows:

- Trash - defined as improperly discarded waste material, including, but not limited to, convenience food, beverage, and other product packages or containers constructed of steel, aluminum, glass, paper, plastic, and other natural and synthetic materials thrown or deposited on the land or water.

- Natural Organic matter – this consists of leaves, plant materials, pieces of tree branches, grass, vegetation and other organic matter.

3. Procedure

A. On October 10, 2018, screenings from the fine screens were taken from the screw compactor discharge. In addition, DC Water removed screenings from the truck and delivered them to a lot on the Blue Plains site. The last recorded rain event utilizing the tunnel was September 27-28, 2018, which had a rainfall of 0.88" and 167 million gallons of CSO captured by the tunnel. The screenings material had thus been sitting in the screw conveyor and truck for approximately 12 days dewatering.

B. Screenings were spread on a concrete slab using rakes.

C. Trash was removed from the screenings using metal grabbers and placed in a separate pile.

D. Empty plastic bins were weighed on a scale as a reference. As the bins were significantly larger than the scale, the bins were placed on 10-gallon buckets for measurement. The bins were weighed three times to ensure accuracy of measurement.

E. One bin was filled with the trash collected. The remaining four bins were filled with the organic matter.

F. The bins were weighed three times to ensure accuracy of measurement.

G. The screenings were then disposed of in a solids handling dumpster on site.

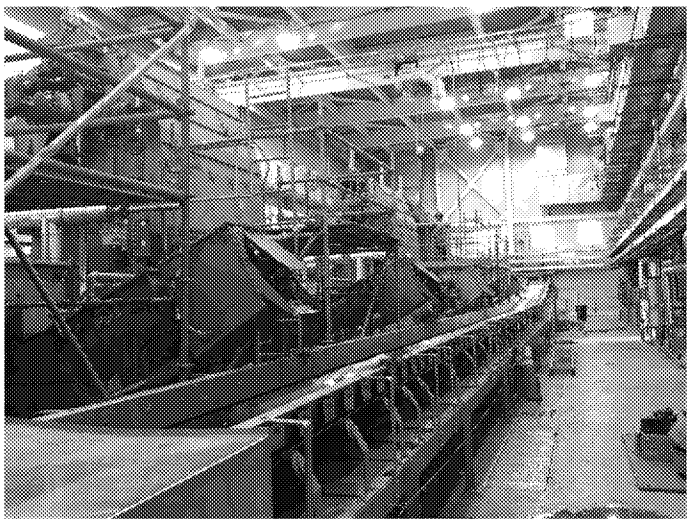
The trash and organic matter was observed to be shredded in most cases, most likely because the fine screens are downstream of the tunnel dewatering pumps. In addition, it was noted that some trees are beginning to shed leaves in the District due to autumn which contributes to the amount of organic matter in the material.

4. Results

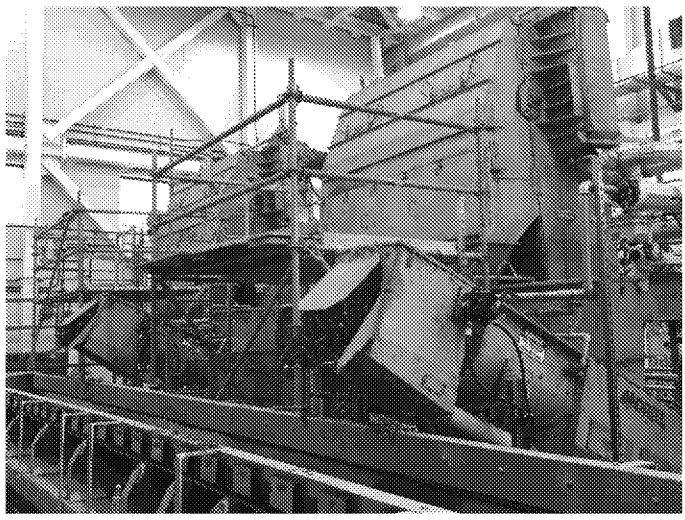
The total weight of the screenings was 220.8 lbs. The weight of the trash was 12.8 pounds and the weight of the remaining organic matter was 208 lbs. The percentage by weight of trash was 5.8%. The data collected and calculations are shown below:

Bin No.	Contents	Weight (lbs)		
		Contents + Container	Container Only	Contents
1	Organic matter	75.2	17.6	57.6
2	Organic matter	69.4	17.6	51.8
3	Organic matter	71.4	17.6	53.8
4	Organic matter	62.4	17.6	44.8
			Subtotal organic matter	208.0
5	Trash	30.4	17.6	12.8
			Subtotal Trash	12.8
			Organic Matter + Trash = 208+12.8	220.8
			% Trash by weight = 12.8/220.8	5.8%

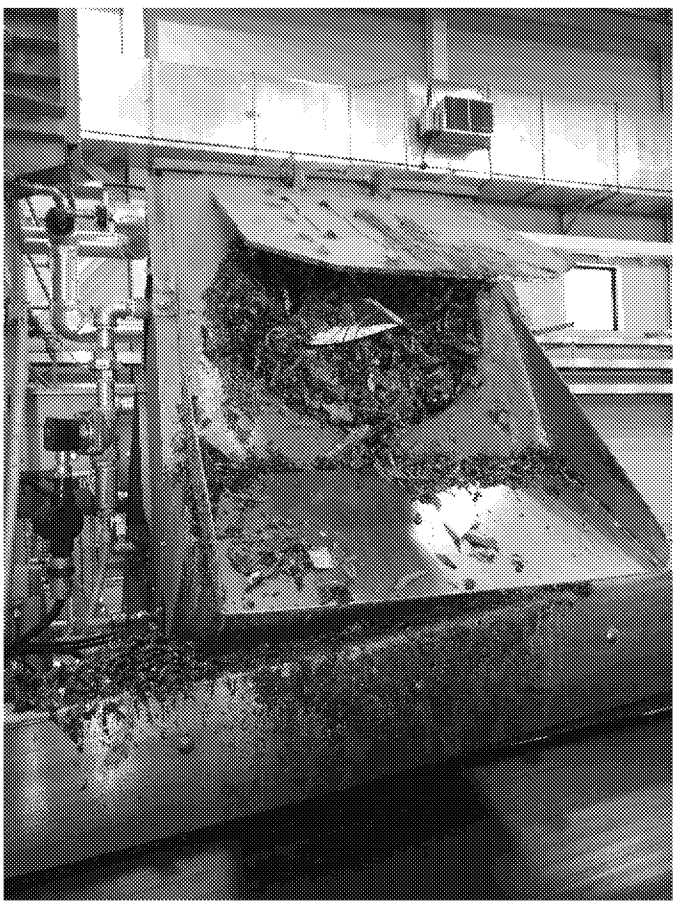
Photographs are shown on the following pages.



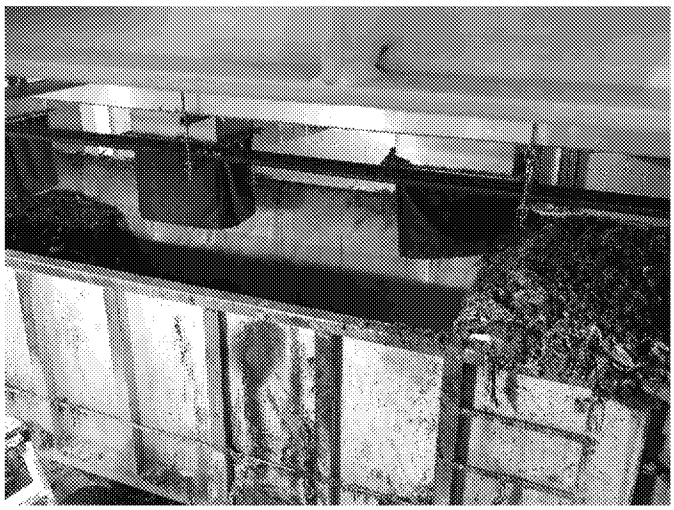
Fine Screen Facility



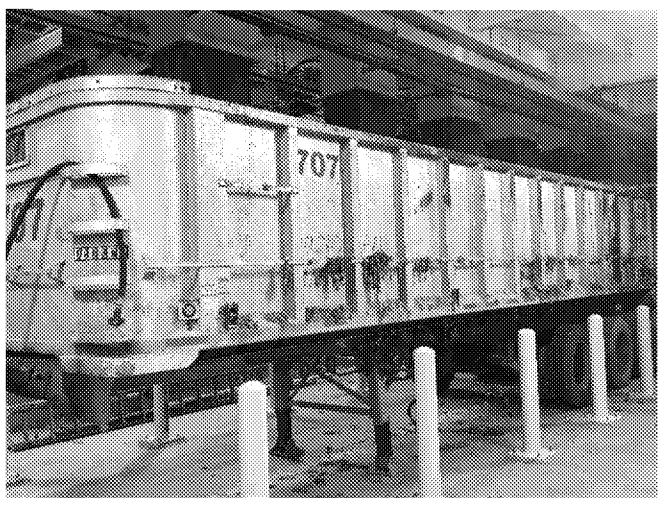
Fine Screen Facility



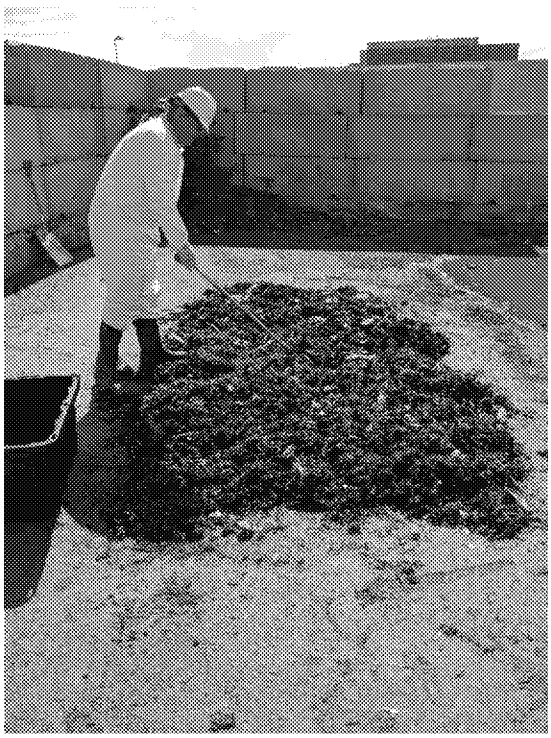
Screw Conveyor Discharge



Truck Loading Facility



Truck Loading Facility



Screenings Spread Out, Trash Being Removed

Screenings After Trash Removal

Trash Removed from Screenings

Material in Bins for Weighing

Exhibit 2
DOH Memos on Water Quality Standards Compliance

GOVERNMENT OF THE DISTRICT OF COLUMBIA
Department of Health
Environmental Health Administration

Bureau of Environmental Quality

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MEMORANDUM

TO: **Doreen E. Thompson, Esq.**
Interim Senior Deputy Director

FROM: **James R. Collier**
Chief

DATE: **November 3, 2004**

SUBJECT: **CSO LTCP**

The Environmental Protection Agency (EPA) has requested that the Department of Health (DOH) submit documentation for the record of the Clean Water Act (CWA) state approval of the Water and Sewer Authority's (WASA) Combined Sewer System Long Term Control Plan (CSO LTCP) for discharges to the combined sewer system required by the 1994 CSO Control Policy. The 1994 CSO Control Policy is published at 59 Fed. R. 18688, and incorporated into the Clean Water Act pursuant to the Wet Weather Water Quality Act, Section 402(q) of the Clean Water Act, 33 U.S.C. § 1342(q). The following is a general summary of those activities that we conducted over the last seven years that were the basis for the approval.

On September 5, 1997, the Environmental Protection Agency (EPA) awarded a $7.1M CWA Section 201 facility planning grant to WASA for the LTCP, under Title II of the CWA subject to 40 CFR 35. Pursuant to 40 CFR 35.917-8, the District of Columbia is required to review and certify WASA's plans. By letter dated August 28, 2003, hereinafter referred to as the "Certification Letter", the DOH Environmental Health Administration, Bureau of Environmental Quality certified that WASA's Long Term Control Plan (LTCP) complies with the applicable provisions of the Clean Water Act, and the appropriate requirements of District of Columbia law.

DOH's approval was based upon an evaluation of the information contained in the LTCP, that was necessary to assure compliance with the Clean Water Act, and the Water Pollution Control Act of 1984 (the Act), as amended, effective March 16, 1985, D.C. Official Code § 8-103.01 *et seq.*, and its implementing regulations in Title 21 of the District of Columbia Municipal Regulations (DCMR), Chapters 11 and 19.

Review of LTCP

DOH reviewed the draft LTCP and sent WASA a letter dated October 18, 2001, with a recommendation that would ensure compliance with the WQS. WASA analyzed DOH's recommendation and several similar alternatives and changed the draft LTCP to an

alternative closely related to DOH's proposal. DOH reviewed the *Final Report* LTCP, dated July 2002, for compliance with the water quality standards, in accordance with the 1994 CSO Control Policy, sections II.C.4.b and II.C.9. The 1994 CSO Control Policy regulates the planning, selection and implementation of water quality management practices and controls, to meet the requirements of the CWA and to involve the public fully during the decision making process. The WASA LTCP provides for a combination of pump station improvements, storage tunnels, sewer separation, outfall consolidation, regular improvements, low impact development and excess flow treatment at Blue Plains. The combined sewer system will be sized to control the one-year 24-hour storm (it is recognized that there is considerable variation in such a storm and antecedent events). Based on the capacity of the system from the one-year 24-hour storm, in the average rainfall year the system will reduce overflows to the Anacostia River by 98%, to the Potomac by 93%, and to Rock Creek by 90%. In an average year there would be two overflow events to the Anacostia, four overflow events to the Potomac and four to Rock Creek[1]. DOH evaluated these overflow events to determine whether the LTCP would violate the District's water quality standards.

Attainment of Water Quality Standards

DOH reviewed the LTCP to determine whether the plan as designed will allow the designated uses of the District's waters to be attained. The District's waters are classified on the basis of their current use and designated beneficial uses. Pursuant to 21 DCMR § 1101.1, the water quality standards specifies categories of beneficial uses as follows: Class A- primary contact recreation[2]; Class B- secondary contact recreation[3]; Class C- protection and propagation of fish, shellfish, and wildlife; Class D- protection of human health related to consumption of fish and shellfish, and; Class E- navigation. Class A is listed as a designated use for the District's waters affected by CSO overflows. Class B is listed as a current use.

The District's water quality standards for recreation are derived from EPA recommendations based on risk levels associated with swimming. Some Class A uses that involve limited immersion will have a lower risk than those with prolonged immersion. The Department of Health does not advocate swimming, nor complete prolonged immersion in the discharge plume, or mixing zone, or the near vicinity on any point source discharge, whether sewage or industrial pollutant, pursuant to 21 DCMR 1158.5[4]. Class A and Class B waters must achieve or exceed water quality standard for bacteria as measured by fecal Coliform as an indicator organism. While fecal coliforms, which are microbes that live in the intestinal tracts of warm-blooded animals, are not usually harmful themselves, their presence indicates the potential for pathogens in the water. DOH established, and EPA approved, a total maximum daily load (TMDL) allocation for bacteria to the combined sewer system in the Anacostia River. The TMDL

allocation for the combined sewer system was determined to achieve the Class A water quality standards.

The DOH analysis of the LTCP indicated that in a few areas, for a few days of the year, the risk of pollution from the CSO would be higher than usual. The LTCP calls for the installation of signs and warning lights regarding those levels to provide real time guides to users to ensure that any risk from CSO discharges are minimal. However, DOH concluded that these occurrences would not negate attainment of the waste loads allocated to the combined sewer system. The District of Columbia water quality standards do not guarantee risk free primary contact recreation, nor does it guarantee that primary contact recreation can be achieved everywhere at all times. Attainment of the Class A designated use would be limited by storm flows from Maryland waters into District waters, rather than any projected overflow. Conditions such as current velocity, floods, clarity of the water and competing uses such as navigation or fishing may restrict these activities to certain areas at certain times, and most certainly winter temperatures and heavy ice create limitations.

Variation of water quality and risk is implicit in the EPA criteria adopted as a regulation of the District of Columbia as can be seen from the definition of primary contact.[5]

"Free of Discharges of Untreated Sewage"

DOH reviewed the LTCP to determine whether the overflows in the LTCP are in conflict with regulations at 21 DCMR 1104.3, which states "Class A waters shall be free of discharges of untreated sewage". Preliminary reduction of microorganisms and bacteria may be accomplished through physical reduction of solids in the wastewater, primarily through sedimentation, flotation, and filtration[6].

The LTCP contains several treatment measures designed to improve the water quality of any overflows from the system[7]. These include: (1) street cleaning, (2) catch basin maintenance, (3) sediment and erosion control (21 DCMR Chapter 5), and (4) the requirement that industrial establishments to apply for and comply with the Wastewater Discharge Permit provisions (21 DCMR § 1511.3). The implementation of these components of the Nine Minimum Control described in the Combined Sewer Overflow (CSO) Control Policy improves the quality of the combined overflows.

Additionally, the LTCP requires a total capture of the first flush loads containing the most concentrated combined sewage[8]. The remaining load is screened of floatables and large solids prior to discharge. Screening is the first unit operation used at wastewater treatment plants. Screening removes objects such as rags, paper, plastics, and metals to prevent damage and clogging of downstream equipment, piping, and appurtenances. In 1994, EPA recognized the importance of controlling solid and floatable materials under the nine minimum controls. CSOs

can contain high levels of floatable materials, suspended solids, biochemical oxygen demand (BOD), oils and grease, toxic pollutants, and pathogenic microorganisms. Floatables are often the most noticeable and problematic CSO pollutant. They create aesthetic problems and boating hazards, threaten wildlife, foul recreational areas, and cause beach closures. The LTCP contains several methods of floatables control, including baffles, catch basin modifications, netting systems, containing boons, skimming processes and trash rack devices.

Therefore, DOH determined that the combination of the above measures will result in "partially treated sewage". Since the LTCP provides some level of treatment for the overflow events, it is

not in conflict with the "free of discharges of untreated sewage" regulations at 21 DCMR 1104.3. This is in keeping with the methods outlined in the Environmental Protection Agency's (EPA) CSO Technology Fact Sheet entitled "Combined Sewer Overflow Technology Fact Sheet, *Screens*" (EPA 832-F-99-040). These procedures are recognized by the standard engineering text, Metcalf and Eddy, 1991, *Wastewater Engineering – Collection, Treatment, Disposal,* McGraw-Hill, Inc., New York.

Compliance with TMDLs

DOH's review found that the LTCP is in conformance with the Total Maximum Daily Loads (TMDLs), and that the LTCP will meet the water quality standards as long as other sources of pollution attain similar levels of reduction.

EPA recommended that the District of Columbia develop TMDLs on a watershed basis[9]. Since the District of Columbia is located at the Fall Line where free flowing rivers become tidally influenced estuaries, the majority of the pollution loads (with potential synergistic and additive effects) in the District of Columbia waters originate outside of the District of Columbia. DOH developed, and EPA approved, TMDLs for the Anacostia River, and made load allocations to the combined sewer system[10]. DOH reviewed the water quality modeling used to develop the LTCP to determine whether the plan would meet the water quality standards for the Potomac and Rock Creek.

DOH also reviewed the water quality computer modeling done for the LTCP concerning the water quality standards for Rock Creek and the Potomac. At the beginning of the design phase of the LTCP, a series of meetings were held between DOH and WASA to discuss the technical tools that would be used by DOH to assess the ability of the LTCP to meet the numerical criteria of the water quality standards. DOH was in the process of constructing certain water quality models to use in the preparation of TMDL's. It was acknowledged that the TMDL's would include an allocation to the CSOs. The water quality models would encompass what DOH believed was a climatologically representative sequence of years for the Anacostia River. WASA agreed to use and improve the DOH models in the preparation of the LTCP, and where DOH did not have a model under preparation, WASA would construct a "TMDL type" of model and use it in the LTCP and then turn it over to DOH for use as a TMDL model.

DOH held monthly TMDL model development meetings that were open to the public, and attended by WASA, the Maryland jurisdictions as well as environmental groups. These meeting included the subject of water quality standards and LTCP updates. At the end of the

LTCP process, DOH and WASA were using the same tools to determine achievement of the numerical goals of the water quality standards. In the LTCP, WASA did not make allocations to other sources except as a general measure. DOH on the other hand conducted a rigorous analysis of different allocations to CSO, Maryland, MS4 storm water and runoff.

DOH completed the TMDLs for BOD and total suspended solids, significantly before the LTCP was completed and WASA "adopted" the allocation in those TMLDs as an integral assumption in the final LTCP. For the Anacostia basin bacteria and toxics, the LTCP was essentially complete when DOH began the analysis of allocation options that would meet the WQS. It

became necessary for DOH to ensure that the degree of control of CSO in the LTCP, when considered with other sources, would achieve the numerical criteria. DOH used the same loadings as the final LTCP and ran allocation reductions to the other sources that affected the waterbody. The model calculations were checked for achievement of the WQS.

The Anacostia Basin bacteria TMDL has a set of tables showing different parts of the river and the achievement of the numerical criteria. Additionally, there is a detailed appendix of data that demonstrates compliance with the numerical criteria. The same exercise was conducted for bacteria in Rock Creek and the Potomac. In an effort to be very conservative, DOH examined the allocation to see if the LTCP would achieve compliance with even more stringent water quality standards such as "no more than 10% of the days exceed 400 organisms/100ml". DOH found that the LTCP allocation exceeded what would be needed for DC waters, but that Maryland will need to make greater reductions to achieve that water quality standard.

For the toxics TMDL, there was not a common tool, but the same hydrological conditions were used. DOH used the overflow volumes in the LTCP and assigned concentrations to those volumes, and then made allocations to CSO, the separate municipal storm sewer system (MS4) storm water runoff, and Maryland. It was determined that the volume of CSO remaining after implementation of the LTCP would not contain enough toxics to cause or contribute to a water quality standard violation. The toxics TMDL's contain the calculations that ensure the LTCP will meet WQS. All TMDL's include a margin of safety.

DOH concluded that for Rock Creek and the Potomac, the studies and modeling in the LTCP demonstrated that the remaining overflows after implementation of the LTCP will meet the District's water quality standards in all receiving waters, in accordance with the 1994 CSO Control Policy.

Monitoring of District Waters

Pursuant to regulations at 21 DCMR 1901 *et seq.*, DOH reviewed the monitoring and compliance measures detailed in the LTCP for compliance with the WASA National Pollution Discharges Elimination System NPDES Permit No. DC0021199, for the Blue Plains Waste Water Treatment Plant. DOH determined that the monitoring and compliance measures, including post construction monitoring, described in the LTCP, will provide adequate information to review performance after the LTCP has been in operation.

Public Notice Requirement

The District of Columbia is located at the Fall Line and it is here that the free flowing rivers become tidally influenced estuaries. The majority of the pollution loads that are in the District of

Columbia waters originate outside of the District of Columbia. Storm flows on Rock Creek, the Anacostia and the Potomac bring tremendous loads of pollutants to the District waters that exacerbate the difficulty of controlling District of Columbia sources. Even so, huge amounts of progress have been made in restoring the aquatic habitat. American shad, hickory shad and striped bass now spawn in the District of Columbia after a thirty year absence. Submerged aquatic vegetation has staged a slow recovery in the Potomac and Anacostia. Bald Eagles and ospreys routinely nest in and near the District. The restoration of the rivers is not complete,

particularly in the case of the Anacostia. The CSO LTCP is a major step in restoring the Anacostia and it places a priority on controlling the overflows to the Anacostia. This required that there be an extensive effort to ensure public involvement in the process.

WASA and the District complied with the public notice and comment requirement for the LTCP, as required by the federal Clean Water Act and the Water Pollution Control Act.
On October 4, 2001, the D.C. City Council Committee on Public Works held a public hearing on WASA's LTCP. The Council proceeding was broadcasted on the city's cable channel. On October 22, 2001, WASA held a public hearing on the LTCP. The plan was publicized in the media, the D.C. Register, and on the District's city cable channel 16. In addition, WASA provided questionnaires to the public on the LTCP. The LTCP provides a summary of those activities.

[1] Final LTCP, Chapter 13.3.4 and 13.4

[2]Primary contact recreation - those water contact sports or activities which result in frequent whole body immersion and/or involve significant risks of ingestion of the water.

[3]Secondary contact recreation - those water contact sports or activities which seldom result in whole body immersion and/or do not involve significant risks of ingestion of the water.

[4] 21 DCMR 1158.5 states:

> Primary contact recreation shall be prohibited in the Potomac and Anacostia Rivers and Rock Creek until such time as the standards in § 1101.2 for Class A beneficial use are consistently maintained.

[5]The EPA criteria document estimated that at a geometric mean of 200 organisms per 100ml that there would be about 8 illnesses out of 1,000 swimmers at a recreation swimming beach. The use of a geometric mean recognizes that there will be occasions where individual samples will be higher than 200 organisms/100ml.

[6]Environmental Protection Agency's (EPA) CSO Technology Fact Sheet entitled "Combined Sewer Overflow Technology Fact Sheet, *Alternative Disinfection Methods*" (EPA 832-F-99-033).

[7]*Final Report* LTCP, dated July 2002, Chapter 13

[8]*Final Report* LTCP, dated July 2002, section 13.3.4

[9] CWA Section 303(d)(1)(C)

[10] See http://www.epa.gov/reg3wapd/tmdl.htm

DEPARTMENT OF HEALTH
Environmental Health Administration

★ ★ ★ **Office of Enforcement, Compliance & Environmental Justice**

MEMORANDUM

TO: Bruce Brennan, Assistant Attorney General
Office of the Attorney General

THRU: Kenneth Campbell
General Counsel

THRU: Kendolyn Hodges-Simons
Interim Chief

FROM: Caroline Burnett, Attorney-Advisor
Watershed Protection Division
Water Quality Division

DATE: November 4, 2004

SUBJECT: **DOH Legal Sufficiency Review of the District of Columbia Certification of the Long Term Control Plan Submitted by WASA Pursuant to the 1994 CSO Policy**

I. ISSUE & BACKGROUND

This memorandum responds to a request by the federal Department of Justice for certification that the District of Columbia Department of Health's certification of the Water and Sewer Authority's Long Term Control Plan for discharges to the District's combined sewer system, required by the Environmental Protection Agency's 1994 Combined Sewer Overflow Control Policy (CSO), is legally sufficient. The 1994 CSO Policy, 59 Fed. Reg.18688 (April 19, 1994), is incorporated into Section 402(q) of the Clean Water Act (33 U.S.C. § 1342(q). The 1994 CSO Policy regulates the planning, selection and implementation of water quality management practices and controls to meet the requirements of the Clean Water Act (CWA) (33 U.S.C. §1251 *et seq.)* and requires full public involvement during the decisionmaking process.

On September 5, 1997, the Environmental Protection Agency (EPA) awarded a $7.1M federal CWA Section 201 facility-planning grant to the Water and Sewer Authority (WASA) for its LTCP, under Title II of the CWA. The LTCP provides for a combination of pump station improvements, storage tunnels, sewer separation, outfall consolidation,

regular improvements, low impact development and excess flow treatment at Blue Plains. The LTCP further provides that the combined sewer system will be sized to control the one-year 24-hour storm (it is recognized that there is considerable variation in such a storm and antecedent events)[1]. Based on the capacity of the system from the one-year 24-hour storm, in the average rainfall year the LTCP will reduce overflows to the Anacostia River by 98%, to the Potomac by 93%, and to Rock Creek by 90%. In an average year there would be two overflow events to the Anacostia, four overflow events to the Potomac and four to Rock Creek[2].

Pursuant to CWA regulations (40 C.F.R § 35.917-7) and the 1994 CSO Policy, the District of Columbia (as the state) is required to review and certify WASA's plans. By letter dated August 28, 2003, (hereinafter referred to as the "Certification Letter") the Department of Health (DOH), Environmental Health Administration (EHA), Bureau of Environmental Quality (BEQ), after carefully reviewing the information contained in the LTCP, certified that WASA's LTCP complies with the 1994 CSO Policy and the District's Water Pollution Control Act of 1984 (the Act), as amended, effective March 16, 1985; D.C. Official Code § 8-103.01 *et seq.*, and its implementing regulations (Title 21 of the District of Columbia Municipal Regulations (DCMR), Chapters 11 and 19).

II. CONCLUSION

The Office of Enforcement, Compliance & Environmental Justice has determined that the DOH/EHA certification of the LTCP is legally sufficient for the following reasons. First, DOH/EHA has authority to certify the LTCP pursuant to District law and Mayor's Order. Second, the DOH/EHA certification is based on a review of the LTCP against the District and federal water quality standards, specifically: (1) whether the LTCP would violate the District's water quality standards for attainment of designated uses (21 DCMR § 1101.1) and the District's Total Maximum Daily Loads (TMDL); (2) whether the overflows in the LTCP would violate the District's water quality standard (21 DCMR §1104.3), which states that, "Class A waters shall be free of discharges of untreated sewage; and (3) whether the LTCP adequately provides for the monitoring of District waters to evaluate the water quality impacts pursuant to the District's water quality standards (D.C. Official Code §§ 8-103.04 and 8-103.05) and the 1994 CSO Policy. Lastly, the DOH/EHA certification evaluated whether there was compliance with the federal CWA regulations (40 C.F.R. § 35.917-2) and the 1994 CSO Policy requiring full public participation in the decision making process on the LTCP.

III. DISCUSSION

A. DOH/EHA Authority to Certify the Long Term Control Plan (LTCP)

The DOH/EHA is authorized to certify the LTCP pursuant to the District's Water Pollution Control Act (the Act) and Mayor's Order issued to effectuate this Act. District of Columbia Official Code §§ 8-103.04 and 8-103.05 authorize the development of

water quality standards, the classification of beneficial uses of District waters and the monitoring and reviews of these waters[3]. District of Columbia Official Code §§ 8-103.06 through 8-103.08 establish the basic structure for regulating District waters including permitting certain discharges; providing for the review of terms of permits, the effects of federal permits, the location of discharges, the recognition of reduction of pollutants; and placing restrictions on quantity of materials discharged.

District of Columbia Official Code § 8-103.11(d) grants the Mayor authority to certify that water quality management plans from "the state, the local or federal government are acceptable". The Mayor delegated his authority under the Act to the Director of the DOH or his or her designee, pursuant to Mayor's Order 98-50, dated April 15, 1998. Through the Department of Health Organization Order No. 21, dated November 8, 1998, the Director of DOH established the Environmental Health Administration (EHA), Bureau of Environmental Quality (BEQ), Water Quality Division (WQD). The EHA/BEQ/WQD was mandated, to, among other things, regulate the discharges of pollutants to surface and ground water in order to protect water quality and the public health.[4] Review and approval of WASA's LTCP impacts the quality of surface water in the District and the certification of the LTCP is within EHA/BEQ/WQD's [5] regulatory authority.

B. DOH/EHA Review of the Long-Term Control Plan (LTCP) for Compliance with District and Federal Water Quality Standards

As indicated, DOH/EHA reviewed the *Final Report* LTCP, dated July 2002, for compliance with water quality standards, in accordance with EPA's 1994 CSO Policy, and issued a Certification Letter dated August 28, 2003. The DOH/EHA Certification Letter evaluated WASA's LTCP overflow events to determine. (1) whether the LTCP would allow for attainment of the District's water quality standards for designated uses (21 DCMR § 1101.1) and the District's Total Maximum Daily Loads (TMDLs); (2) whether the overflows in the LTCP would violate the District's water quality standard (21 DCMR §1104.3), which states that, "Class A waters shall be free of discharges of untreated sewage; and (3) whether the LTCP adequately provides for the monitoring of District waters to evaluate the water quality impacts of overflows pursuant to the District's water quality standards (21 DCMR Chapter 11) and the 1994 CSO Policy. Lastly, the Certification evaluated whether there was compliance with the federal CWA regulations (40 C.F.R.§ 35.917-2) and the 1994 CSO Policy requiring full-scale public participation in the decision making process on the LTCP.

1. Attainment of Water Quality Standards for Designated Use

The DOH/EHA reviewed the LTCP to determine whether the plan as designed will allow attainment of the designated use of the District's waters as set out in the District's Water Quality Standards (21 DCMR § 1101.1) and the District's Total Maximum Daily Loads (TMDLs), which were established pursuant to the requirements of the CWA, Section 303(d)(1)(c) and published at www.epa.gov/reg3wapd. According to the District's Water

Quality Standards, the District's waters are classified on the basis of their current use and designated beneficial uses. Specific categories of beneficial uses are as follows: Class A- primary contact recreation[6]; Class B- secondary contact recreation[7]; Class C- protection and propagation of fish, shellfish, and wildlife; Class D- protection of human health related to consumption of fish and shellfish; and Class E- navigation. Class A is listed as a designated use for the District's waters affected by CSO overflows.

At the time of DOH/EHA certification, the DOH/EHA established, and EPA approved, a total maximum daily load (TMDL) allocation for bacteria (including fecal coliform), biochemical oxygen demand, toxics and total suspended solids in the Anacostia River, for the combined sewer system. The Certification letter indicated that the LTCP is in conformance with the TMDLs. DOH/EHA concluded that the TMDLs demonstrate attainment of the water quality standard.[8]

According to the Certification Letter, DOH/EHA reviewed the water quality computer modeling done for the LTCP and the water quality standards for Rock Creek and the Potomac, and determined that the studies and modeling in the LTCPdemonstrated that the remaining overflows, after implementation of the LTCP, will meet the water quality standards, as long as other sources of pollution receive similar levels of reduction. The DOH/EHA analysis of the LTCP indicated that in a few areas, for a few days of the year, the risk of pollution from the CSO would be higher than usual. Some Class A uses that involve limited immersion will have a lower risk than those with prolonged immersion[9]. To address this, however, the LTCP calls for the installation of signs and warning lights regarding those levels to provide real time guides to users to ensure that any risk from CSO discharges are minimal[10].

However, the DOH/EHA concluded that these occurrences would not negate attainment of the waste loads allocated to the combined sewer system. Attainment of the designated use would be limited by storm flows from Maryland waters into District waters, rather than any projected overflows. Since the District of Columbia is located at the Fall Line where free flowing rivers become tidally influenced estuaries, the majority of the pollution loads that are in the District of Columbia waters originate outside of the District of Columbia.

2. Surface Waters "Free of Discharges of Untreated Sewage"

The DOH/EHA reviewed the LTCP to determine whether the overflows in the LTCP are in conflict with regulations at 21 DCMR §1104.3, which state that, "Class A waters shall be free of discharges of untreated sewage". Untreated sewage is not defined by the regulation. However, the standards provide at 21 DCMR § 1104.1 that:

> The surface waters of the District shall be free from substances in amounts or combinations that do any one of the following:
> (a) Settle to form objectionable deposits;

(b) Float as debris, scum, oil, or other matter to form nuisances;
(c) Produce objectionable odor, color, taste, or turbidity;
(d) Cause injury to, are toxic to, or produce adverse physiological or behavioral changes in humans, plants, or animals;
(e) Produce undesirable or nuisance aquatic life or result in the dominance of nuisance species; or
(f) Impair the biological community that naturally occurs in the waters or depends on the waters for its survival and propagation.

DOH /EHA determined that since the LTCP provides some level of treatment for the overflow events, it is not in conflict with the "free of discharges of untreated sewage" regulations at 21 DCMR §1104.3; and that the combination of the measures under the LTCP would result in "partially treated sewage"[11] and the physical reduction of solids in wastewater, pursuant to EPA's "Combined Sewer Overflow Technology Fact Sheet, *Alternative Disinfection Methods*" (EPA 832-F-99-033). According to this EPA Fact Sheet, "preliminary reduction of microorganisms and bacteria may be accomplished through physical reduction of solids in the wastewater, primarily through sedimentation, flotation, and filtration". The EPA 1994 CSO Policy recognized the importance of controlling solid and floatable materials in CSOs[12]. According to the DOH/EHA, the LTCP contains several methods of floatables control, including baffles, catch basin modifications, netting systems, containing boons, skimming processes and trash rack devices[13]. The LTCP requires a total capture of the first flush loads containing the most concentrated combined sewage[14]. The remaining load is screened of floatables and large solids prior to discharge. Screening is the first unit operation used at wastewater treatment plants. Screening removes objects such as rags, paper, plastics, and metals to prevent damage and clogging of downstream equipment, piping, and appurtenances. This is in keeping with the methods outlined in the Environmental Protection Agency's (EPA) CSO Technology Fact Sheet entitled "Combined Sewer Overflow Technology Fact Sheet, *Screens*" (EPA 832-F-99-040).

Second, the DOH/EHA determined that the LTCP contains several treatment measures designed to control the quantity of pollutants and to improve the water quality of any overflows from the system[15]. They are: (1) street cleaning, (2) catch basin maintenance, (3) sediment and erosion control (21 DCMR Chapter 5), and (4) the industrial pretreatment and permit requirements (21 DCMR § 1511.3). The implementation of these components of the Nine Minimum Controls described in the 1994 CSO Policy improves the quality of the combined overflows.[16]

3. Monitoring of District Waters

The DOH/EHA reviewed the LTCP to determine whether the LTCP adequately provides for the monitoring of District waters to evaluate the water quality impacts of

overflows pursuant to the District's water quality standards for monitoring (D.C. Official Code §§ 8-103.04 and 8-103.05 and 21 DCMR §1901) and monitoring data as required by the 1994 CSO Policy for District waters.

DOH/EHA reviewed the monitoring and compliance measures detailed in the LTCP for compliance with the WASA National Pollution Discharges Elimination System NPDES Permit No. DC0021199, for the Blue Plains Waste Water Treatment Plant. DOH/EHA determined that the monitoring and compliance measures, including post-construction monitoring described in the LTCP[17] would provide adequate measurements to evaluate the water quality impact during the operation of the facilities. The phased post-construction monitoring program in the LTCP will provide adequate information to review the overall performance after the plan has been in operation.
The DOH /EHA also actively participated[18] in ensuring that accurate, consistent and reproducible water quality monitoring data was produced in the LTCP, pursuant to regulations at 21 DCMR Chapter 19[19]and the 1994 CSO Policy.

C. Public Involvement Requirement

Finally, WASA and the District complied with the requirement for a full-scale public participation program in the decision making process on the LTCP, as required by regulations implementing the federal Clean Water Act, 40 C.F.R. § 35.917-5, and the Water Pollution Control Act, D.C. Official Code § 8-103.06(i). WASA instituted a full-scale public participation program because of the significant impact on the environmentally sensitive Potomac and Anacostia Rivers[20]; the substantial total cost to the community or substantial increased cost to users, and significant public controversy.

Chapter 10 of the LTCP details the opportunities for significant public involvement provided by WASA. WASA established an advisory group, the Stakeholder Advisory Panel. This panel provided a formal liaison between the facilities planning advisory group, which included DOH, EPA Region III, Montgomery County and Prince George's County. WASA also conducted neighborhood meetings to discuss the plan. WASA notified ratepayers and stakeholders directly about the plan review process through educational mailers in water and sewer bills, and through the mailing of newsletters. The plan was publicized in the media, and also on the District's city cable channel. In addition, WASA provided questionnaires to the public on the LTCP, and received over 2,300 comments. Citizens were provided with information at three (3) public hearings, about and opportunities to become involved in the assessment of the District's water quality problems and needs, the identification and evaluation of locations for waste water treatment facilities, and of alternative treatment technologies and systems. Notice requirements were met as notice was given in four (4) local newspapers of general circulation thirty (30) to forty-five (45) days before each public meeting.[21]

The DOH/EHA was represented at a majority of the public meetings. Therefore, DOH/EHA has determined that WASA met the requirements of a full-scale public

participation program in the planning process of the LTCP.

We have included nine (9) attachments to facilitate your review. If you have any further questions regarding this matter, please contact Kenneth Campbell at (202) 442-5970.
Attachments (9)

1. Certification Letter dated August 28, 2003
2. EPA Combined Sewer Overflow (CSO) Control Policy dated April 19, 1994
3. Mayor's Order 98-50 dated April 15, 1998
4. DOH Organizational Order dated November 6, 1998
5. Water Pollution Control Act, D.C. Official Code § 8-103.01 *et seq.*
6. District of Columbia Water Quality Standards, 21 DCMR §1100 *et seq.*
7. EPA Combined Sewer Overflow Technology Fact Sheet (*Screens*) – September 1999
8. EPA Combined Sewer Overflow Technology Fact Sheet (*Alternative Disinfection Methods*) - September 1999
9. 40 C.F.R. § 35.917.-7

[1] DOH/ certification letter to Jon Capacasa, EPA, dated August 28, 2003 , page 1.
[2] *Final Report* LTCP, Chapter 13.3.4 and 13.4.
[3] D.C. Official Code § 8-103.4 states:

> (a) At least once every 3 years, the Mayor shall review the water quality standards and if appropriate revise the classification of the beneficial uses of the waters and the criteria for water needed for the particular classes of beneficial uses.
>
> (b) The classifications and the criteria shall accompany guidelines for preserving the waters for the beneficial uses and for preventing harm to the water quality.
>
> (c) Before promulgating the classifications, criteria, and guidelines, the Mayor shall consider the environmental, technological, institutional, and socio-economic impact of applying and enforcing them.
>
> (d) The Mayor shall regularly monitor District waters, according to their classification under subsection (a) of this section, to determine whether the water fulfills the quality standards established under this subchapter.

[4] The Director issued the Organizational Order pursuant to the authority in the Reorganization Plan No. 4 of 1996, effective July 17, 1996 (part A of subchapter XIV of Chapter 15 of Title 1, D.C. Official Code).
[5] Hereinafter referred to as the DOH BEQ.
[6] Primary contact recreation - those water contact sports or activities which result in frequent whole body immersion and/or involve significant risks of ingestion of the water.
[7] Secondary contact recreation - those water contact sports or activities which seldom result in whole body immersion and/or do not involve significant risks of ingestion of the water.
[8] Certification Letter, page 2.
[9] Certification Letter, page 2.
[10] Certification Letter, page 2.
[11] Certification Letter, page 2.
[12] EPA 1994 CSO Policy, section II.B.6.
[13] *Final Report* LTCP, dated July 2002, Section 13.3.4.
[14] *Final Report* LTCP, dated July 2002, Section 13.3.4.
[15] *Final Report* LTCP, dated July 2002, Chapter 7.
[16] The procedures outlined in the LTCP are also recognized as acceptable source control methods by the structural engineering text, Metcalf and Eddy, 1991, *Wastewater Engineering – Collection, Treatment, Disposal,* McGraw-Hill, Inc., New York.
[17] *Final Report* LTCP, Chapter 15.
[18] *Final Report*, LTCP, Section 10.2.3
[19] 21 DCMR Section 1900.1 states:

> The purpose of this chapter is to provide for accurate, consistent and reproducible water quality monitoring data for decisionmaking purposes. This chapter shall apply to ambient surface and ground water quality monitoring, special monitoring studies, compliance monitoring, monitoring required as a part of a permit, or to modify a permit, and self-monitoring of discharges.

[20] Certification Letter, page 2.
[21] *Final Report*, LTCP, Section 10.2.1.

Exhibit 3
EPA Memo on Water Quality Standards Compliance

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

SUBJECT: DC Water and Sewer Authority 11/29/04
Blue Plains Treatment Facility
Draft Modified Permit DC0021199
WASA LTCP/DC Water Quality Standards

TO: DC0021199 File

WASA LTCP Water Quality Standards

A. Background

One of the primary goals of the 1994 Combined Sewer Overflow Policy (CSO Policy), is to achieve compliance with the Clean Water Act (CWA) by providing for the attainment of applicable water quality standards. The CSO Policy provides that WQS be achieved through implementation of the nine minimum controls and development and implementation of a long term control plan (LTCP). The DC Water and Sewer Authority (WASA) submitted its final LTCP dated July 2002 to EPA, the permitting authority in this instance. WASA chose the "demonstration" approach described in the CSO Policy, in developing its LTCP. Under the demonstration approach, WASA should demonstrate the following:

1. The planned control program is adequate to meet WQS and protect designated uses, unless WQS or uses cannot be met as a result of natural background conditions or pollution sources other than CSOs;

2. The CSO discharges remaining after implementation of the planned control program will not preclude the attainment of WQS or the receiving water's designated uses or contribute to their impairment. Where WQS and designated uses are not met in part because of natural background conditions or pollution sources other than CSOs, a total maximum daily load, including a wasteload allocation and a load allocation, or other means should be used to apportion pollutant loads;

3. The planned control program will provide the maximum pollution reduction benefits reasonablely attainable; and

4. The planned control program is designed to allow cost effective expansion or cost effective retrofitting if additional controls are subsequently determined to be necessary to meet WQS or designated uses. CSO Policy, 59 FR 18688, at 18693.

On August 28, 2003, the District of Columbia Department of Health (DOH) , informed EPA that upon its review of WASA's LTCP and other pertinent documents, DOH was satisfied that the discharges remaining after implementation of the LTCP, together with the other source reductions, will meet the narrative WQS in all receiving waters. In order to ensure that the degree of control of CSO in the LTCP, would achieve the numerical criteria, DOH used the same projected loadings as the final LTCP and performed allocation reductions to the other sources that affected the water body. The model calculations were checked for achievement of the WQS. The Anacostia Basin bacteria TMDL has a set of tables showing different parts of that River and the achievement of the numerical criteria. Additionally, the Anacostia Basin bacteria TMDL contains a detailed appendix of data that demonstrates compliance with the numerical criteria. DOH conducted the same exercise for bacteria loadings in Rock Creek and the Potomac River. In an effort to be conservative, DOH examined the allocation to see if the LTCP would achieve compliance with an even more stringent WQS specfically "no more than 10% of the days exceed 400 organisms/100 ml". DOH found that the LTCP allocation exceeded what would be needed for each of the relevant receiving waters within the District of Columbia, but that Maryland will need to achieve greater reductions (i.e., pollutant sources in Maryland) in order to achieve DC WQS. This determination includes the recognition that the LTCP will reduce the pollution loadings causing impairments by the amounts identified in the pertinent TMDLs. For its WQS compliance review, the DC DOH considered the capacity of the engineered controls as they relate to storm size, the numbers of anticipated overflows in each water body in an average year , (following complete implementation of the LTCP), the modeling for the LTCP, the permit requirements and the financial burden for implementation of the LTCP. After review of the LTCP and other relevant documents, EPA has determined that the DOH conclusion is reasonable and EPA has similarly concluded that the implementation of the LTCP is likely to protect WQS, based upon current available information.

The following summarizes EPA's analysis of the WASA LTCP in consideration of the requirements of the "demonstration" approach, under the CSO Policy:

1. The planned control program is adequate to meet WQS and protect designated uses, unless WQS or uses cannot be met as a result of natural background conditions or pollution sources other than CSOs.

The planned control program described in the LTCP consists of a combination of pump station improvements, construction of large storage tunnels, limited sewer separation, selected outfall consolidation, regulator improvements, low impact development and excess flow treatment improvements at the Blue Plains wastewater treatment plant. This system, once implemented, is designed to reduce overflows to the Anacostia River by 98%; reduce overflows to the Potomac River by 93%; and to reduce overflows to Rock Creek by 90% in an average year. These reductions are further described by the LTCP as two overflow events to the Anacostia, four overflow events to the Potomac and four overflow events to Rock Creek. The LTCP and TMDL reductions speak directly to reductions from the CSOs.

The District's waters are classified based on their current and designated uses. DC WQS provide the following: Class A - primary contact recreation; Class B - secondary contact recreation; Class C - protection and propagation of fish, shellfish and wildlife; Class D - protection of human health related to consumption of fish and shellfish, and; Class E - navigation. Class A is listed as a designated use for the District's waters affected by CSO overflows. Class B is listed as a current use.

Class A and B waters must achieve or exceed the water quality standard for bacteria as measured by fecal coliform. 21DCMR 1104.6. Fecal coliforms are microbes which live in the intestinal tract of warm-blooded animals. EPA has approved a total maximum daily load (TMDL) allocation for bacteria to the combined sewer system in the Anacostia River. That CSO TMDL allocation was determined to achieve the Class A water quality standard.

Further, the DC WQS specify that Class A waters be free of untreated sewage. 21 DCMR 1104.3. Fecal coliform is a principal contaminant of concern in untreated sewage. Although untreated sewage is not defined by regulation, the narrative standards in the WQS provide guidance regarding how this standard is to be met e.g., District waters shall be free from objectionable deposits, odor, taste, debris, etc. The CSO Policy recognizes the importance of controlling solid and floatable materials in CSOs. The LTCP requires total capture of the first flush loads containing the most concentrated sewage. For the remaining flow, the LTCP provides floatables control through baffles, catch basin modifications, netting systems, booms, skimming procedures and trash skimming. Lastly, implementation of the Nine Minimum Controls as required by the permit, e.g., street sweeping, catch basin maintenance, etc., will improve the quality of waters reaching the sewers.

The CWA provides that where WQS cannot be met through technology based limits, then more stringent water quality based effluent limits must be met. The WASA permit requires that the technology-based limits be met through implementation of the nine minimum controls (NMCs) and the WQS are to be met by implementation of the LTCP (including continued implementation of the NMCs) and achievement of the TMDL- derived limits.

Both the LTCP and TMDLs acknowledge that there are sources of contamination in addition to CSOs which affect water quality in the District. These additional sources include, but are not limited to upstream sources outside the District, storm water runoff and sediments, which are beyond the regulatory control of WASA or the District. The LTCP and TMDLs address only the contaminant contribution made by CSOs, thus, additional controls beyond the scope of the LTCP may be necessary to address the other sources of contamination.

2. The CSO discharges remaining after implementation of the planned control program will not preclude the attainment of WQS or the receiving water's designated uses or contribute to their impairment. Where WQS and designated uses are not met in part because of natural background conditions or pollution sources other than CSOs, a total maximum daily load, including a wasteload allocation and a load allocation, or other means should be used to apportion pollution loads.

In its August 28, 2003 letter, the DC DOH determined that the CSO discharges remaining after construction of the tunnels are properly characterized as "partially treated sewage". The term, "partially treated sewage", is not defined in the District's water quality standards. After reviewing the LTCP, including the CSO control measures (capture and storage of the "first flush" which is defined as 126 million gallons for the Anacostia, 58 million gallons for the Potomac and 9.1 million gallons for Rock Creek; and screening for each CSO discharge thereafter) the District interpreted the above narrative criteria and reasonably found that the remaining discharges would be discharges of "partially treated sewage."

As noted at condition 1 above, EPA believes that implementation of the LTCP will virtually eliminate solids and floatables from the CSO discharges because the first flush, which contains the most concentrated sewage, will be captured in the tunnels and conveyed to Blue

Plains for treatment . Further, in the event that the rainstorm event is prolonged and CSOs do occur, screening and other controls will be employed. Therefore, discharges remaining after LTCP implementation will not run afoul of the prohibition against untreated sewage in DC WQS.

Water quality criteria are based on protection of beneficial uses and a reasonable reduction of risk from the effects of that pollutant whether that risk is to human health or aquatic life. As the District has articulated in its TMDL report, there is a risk level associated with each class of beneficial use, and within each use, there are further levels of risk associated with each of the activities covered by that use. For example, the Class A Primary Contact Recreation use includes such higher risk activities as swimming but also the lower risk activity such as wading. A Class A water which achieves its water quality criterion may still be expected to produce approximately eight illnesses for every 1,000 swimmers, as swimming is a high risk activity. The District's numeric water quality criteria for bacteria is a monthly geometric mean consistent with EPA's criteria number for monthly average protection, and implies that there may be some days where the monthly numeric limit may not be achieved. The mixing zone provision of the DC water quality standards allows for localized areas of non-attainment for numerical standards provided that the WQS are met at the edge of the mixing zone.

The above analysis, combined with EPA's review of the studies and modeling in the LTCP and TMDLs demonstrate that for the CSO load portion to the receiving waters, the overflows remaining after implementation of the LTCP will meet the DC WQS.

The DOH developed, and EPA approved, TMDLs for the Anacostia River and Rock Creek, which contain waste load allocations for discharges from WASA's combined sewer system. The models developed for the TMDLs were based upon models that were developed for the LTCP. Thus, DOH and WASA used the same tools to determine achievement of the numerical goals of the WQS. In the LTCP, WASA did not make allocations to other sources except to demonstrate that reducing CSO loads alone will not achieve WQS. In the TMDLs, DOH conducted an analysis of different combinations of allocations to CSO, upstream sources, MS4 storm water and runoff and selected the TMDL allocations to those sources.

DOH completed the TMDLs for BOD and TSS before the LTCP was completed and these TMDL allocations became assumptions used in the development of the LTCP. For bacteria and toxics in the Anacostia River, the LTCP was essentially complete when DOH began the analysis of allocation options that would meet WQS. It was therefore necessary for the degree of control of CSO in the LTCP, when considered with other sources to achieve the numerical criteria. DOH used the same loadings as the final LTCP and ran allocation reductions to the other sources that affected the water body. Both DOH and EPA confirmed that these model calculations would assure that the allocations would meet WQS.

The Anacostia Basin bacteria TMDL contains various tables which show different parts of the River and the achievement of the numerical criteria. In addition, the TMDL contains appendices of data which demonstrate compliance with the numerical criteria for bacteria. An identical approach was taken for the Potomac River and Rock Creek. To be conservative, DOH examined the allocations to see if the LTCP would achieve compliance with more stringent WQS. DOH demonstrated that the LTCP allocation exceeded what was needed for DC waters, however, additional reductions would be needed from other sources.

For the toxics TMDL, the same hydrological conditions were used in the LTCP as in the TMDL. DOH used the overflow volumes in the LTCP and assigned concentrations to those volumes, then made allocations to WASA CSOs, the DC MS4 system and sources in Maryland. DOH determined that the volume of CSO remaining after implementation of the LTCP would not contain enough toxics to cause or contribute to non-attainment for an applicable water quality standard. The toxics TMDL contains calculations that ensure the LTCP will meet WQS. Further, and importantly, all TMDLs provide for a margin of safety.

EPA concludes that for Rock Creek, and the Potomac River the studies and modeling in the LTCP demonstrate that the remaining overflows after implementation of the LTCP will not preclude the attainment of the District's WQS in accordance with the CSO Policy.

3. *The planned control program will provide the maximum pollution reduction benefits reasonablely attainable.* Chapter 9 of the LTCP contains a cost evaluation for the selected controls. The costs associated with reducing overflows to between 12 and zero per year were calculated. Based on CSO volume reduced, there appeared to be a point of lessening return, i.e., knee of the curve on a graph charting overflows reduced against cost, at about two overflows per year into the Anacostia River. At that point, the cost curve turned towards the vertical, implying significantly increasing costs for additional benefit, i.e., additional overflows reduced. Two overflows per year for the Anacostia appears to be the approximate knee of the curve for CSO overflow volume.

With regard to Rock Creek, with the exception of Piney Branch, the CSOs predicted in the LTCP are very small and infrequent compared to the other receiving waters. The knee of the curve analysis showed little change in benefit but a large increase in cost between two and four CSO discharges per year and the final LTCP recommended 4 overflows per year in Rock Creek and one in Piney Branch.

For the Potomac River, the LTCP recommends 4 overflows per year which represents the point of lessening returns based on CSO volume reduced.

Given the extent of the reductions in the CSO discharges compared to the cost of total elimination of the discharges, the controls provided by the LTCP appear to be reasonable. Effectiveness of the remedial alternatives will be physically measured during post-construction monitoring which is intended to verify actual reductions and to assess the need for additional controls.

4. The planned program is designed to allow cost effective expansion or cost effective retrofitting if additional controls are subsequently determined to be necessary to meet WQS or designated uses.

As described in CSO requirement number 3 above, post-construction monitoring is required to verify that the engineered alternatives meet their intended goals. As noted above, once LTCP is implemented, WASA will employ additional controls, e.g., baffles, catch basin modifications, netting systems, booms, skimming procedures and trash skimming will be employed to treat the remaining discharges. In addition, implementation of the nine minimum controls required by the permit, e.g., street sweeping, catch basin maintenance, etc., will improve the quality of waters reaching the sewers.

In the event that post-construction monitoring demonstrates that additional controls are necessary, the remaining outfalls can be retrofitted with additional controls such as chlorination facilities, additional screens, booms or other devices to improve their performance. The cost of these additional controls should be insignificant compared to the cost of sewer separation, building the tunnels, rehabilitation of the pumping stations and improvements at Blue Plains, should such additional controls be necessary.